Studies of Pacific Island Plants, XXI
New and Noteworthy Flowering Plants from Fiji[1]

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CONTINUING STUDY of botanical collections made in recent years under the auspices of the Fiji Department of Agriculture has indicated the occurrence of various hitherto undescribed species of flowering plants in Fiji. In this paper seven species are described as new, in the genera *Dysoxylum* (Meliaceae), *Melochia* and *Sterculia* (Sterculiaceae), *Astronidium* (Melastomataceae), and *Calycosia, Mastixiodendron,* and *Sukunia* (Rubiaceae). In the last of these families the monotypic genus *Hedstromia* is also discussed. The opportunity is also taken to propose five required new combinations in the genus *Neuburgia* (Loganiaceae).

Pertinent herbarium material of the following institutions is here cited: Bernice P. Bishop Museum (BISH); Gray Herbarium of Harvard University (GH); Royal Botanic Gardens, Kew (K); New York Botanical Garden (NY); Department of Agriculture, Suva, Fiji (SUVA); University of California, Berkeley (UC); and U. S. National Herbarium (US). The continuing cooperation of herbarium administrators is appreciated.

MELIACEAE

Dysoxylum Bl.

Dysoxylum (sect. Dysoxylum) ***aliquantulum*** sp. nov.

Arbor ad 18 m alta, partibus novellis, petiolis, inflorescentiae ramulisque obscure strigillosopuberulis (pilis pallidis 0.1–0.2 mm longis) mox glabratis, ramulis teretibus gracilibus superne 3–5 mm diametro; foliis 18–22 cm longis paripinnatis 3- vel 4-jugis, petiolo 2.5–5 cm longo et rhachidi gracilibus saepe angulatis mox glabratis, petiolulis canaliculatis subnullis vel ad 1 mm longis, foliolorum laminis papyraceis in sicco fusco-viridibus lanceolato-ellipticis saepe subfalcatis, 8–10 cm longis (basalibus brevioribus), 2.5–3.5 cm latis, basi inaequilateraliter attenuatis (margine distali breviore), in acuminem 10–15 mm longum obtusum angustatis, costa supra plana vel angulata subtus prominente, nervis secundariis utrinsecus 8–10 marginem versus curvatis anastomosantibus supra planis subtus prominulis, rete venularum inconspicuo supra immerso subtus plano; inflorescentia axillari sub anthesi 6–10 cm longa ad 5 cm lata paniculata brevi-pedunculata vel e basi ramosa, ramulis lateralibus paucis patentibus brevibus, bracteis linearibus vel deltoideis ad 1.5 mm longis, ramulis ultimis saepe trifloris, bracteolis sub floribus deltoideis haud 0.5 mm longis; indumento bractearum pedicellorum calycis et petalorum sericeopuberulo, pilis sparsis inconspicuis 0.1–0.15 mm longis; pedicellis 0.5–1 mm longis in calycem abrupte expansis; calyce cupuliformi sub anthesi 1.2–1.5 mm longo et apice 1.7–2 mm diametro, tubo minuto, limbo submembranaceo intus glabro 4-dentato, dentibus late deltoideis 0.2–0.5 mm longis subacutis margine inconspicue glandulosis; petalis 4 liberis oblongis sub anthesi 1.7–2 × 0.8–1 mm, intus glabris, apice obtusis; tubo stamineo membranaceo brevi-cylindrico 1–1.3 mm longo et diametro, utrinque glabro, apice inter stamina inconspicue lobato; antheris 6, 7, vel 8 sessilibus oblongis 0.7–0.8 mm longis tubo subaequalibus utroque rotundatis; disco libero submembranaceo 0.3–0.5 mm alto 0.8–1 mm diametro apice crenulato et pilis ad 0.3 mm longis obscure hispidulo; ovario minuto sericeo, stylo glabro 0.7–0.8 mm longo, stigmate peltato-capitato.

DISTRIBUTION: Endemic to Fiji and known only from the type collection, obtained at an elevation of about 600 m in forest, and noted as a tree 18 m high; the young flowers are recorded as green. A local name is *sorovulu,* and the species is indicated as a potential timber tree.

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HOLOTYPE: Fiji: Viti Levu: Nandronga & Navosa: Nausori Highlands, *Fiji Dept. Agr.* (coll. E. Damanu) *15605* (BISH holotype; isotype at SUVA), February 5, 1968.

The new species is not closely allied to any species of *Dysoxylum* in our area, and among the species treated in the writer's revision (in Contr. U. S. Nat. Herb. 30:499–518. 1952) it need be compared only with *D. lenticellare* Gillespie. However, it is immediately distinguished by its smaller flowers (*D. lenticellare* having the calyx about 2 mm long and with obvious, imbricate lobes, the petals 5–6 mm long, the staminal tube about 4 mm long, the stamens apparently always 10, and the disk comparatively obvious, 1.3–1.5 mm long). Additionally, *D. aliquantulum* has smaller leaves than *D. lenticellare,* the leaves of which are 15–60 cm long, with petioles usually 7–20 cm long, and with leaflets often as many as 10 or 12, conspicuously petiolulate, and up to 22 × 9 cm.

A closer relative of *D. aliquantulum* is *D. micranthum* Merr. & Perry, of the Solomon Islands, which also has few (4 or 6) subsessile leaflets, similarly small flowers, and an inconspicuously dentate calyx. However, in comparison with the new species *D. micranthum* has somewhat longer leaflets; its petals are strictly glabrous, often 5, and basally joined into a corolla (not mentioned in the original description) with free lobes 1.5–1.8 × 1–1.5 mm, and its anthers are 8 or 10 rather than, as in *D. aliquantulum,* often fewer than to be anticipated in a diplostemonous flower.

STERCULIACEAE

Melochia L.

Melochia parhamii sp. nov.

Frutex vel arbor parva 1.5–3 m alta, partibus novellis, ramulis, stipulis, petiolisque copiosissime fusco-pilosis, pilis 0.5–1.2 mm longis interdum stellatis 2–5-radiatis eglandulosis atque simplicibus pluricellularibus capitato-glandulosis; stipulis conspicuis suborbicularibus recurvatis, 3–8 mm longis et latis, apice rotundatis vel late obtusis plurinervatis; foliorum petiolis crassis 5–12 cm longis, laminis papyraceis late ovatis, 11–23 cm longis, 7–20 cm latis, basi profunde cordatis (vel juventute rotundatis), apice in acuminem obtusum 1–1.5 cm longum angustatis, margine manifeste crenatis, utrinque ut petiolis (sed pilis plerumque eglandulosis) copiose et subpersistenter pilosis, e basi 5- vel 7-nerviis, costa cum nervis secundariis utrinsecus 4–6, nervis primariis et secundariis supra paullo subtus peracute elevatis, rete venularum intricato copioso utrinque subplano; inflorescentiis apicem ramulorum versus axillaribus corymbiformibus 10–25 cm longis, pedunculo ad 12 cm longo ramulisque ut petiolis copiose pilosis, floribus 1–3 in umbellulis laxis, bracteis deltoideo-ovatis 1–2 mm longis extus pilosis caducis, pedicellis sub anthesi 3–5 mm sub fructu ad 8 mm longis, ut calyce copiose pilosis (pilis stellatis eglandulosis pauciradiatis 0.2–0.5 mm longis atque simplicibus pluricellularibus 0.3–0.8 mm longis capitato-glandulosis); calyce campanulato 5.5–6 mm longo et apice 7–8 mm diametro, lobis ovato-lanceolatis 4–5 mm longis et 2–4 mm latis acutis, sinibus acutis; petalis oblanceolatis vel obovatis, 7.5–8 mm longis, 2.5–4 mm latis, basi angustatis et filamentum 1.5–2 mm adnatis; in forma brevistyla filamentis praeter basim inter se liberis circiter 5 mm longis, inferne membranaceo-dilatatis circiter 1.5 mm latis, superne filiformibus, antheris late oblongis circiter 1.5 × 0.8 mm; gynoecio sub anthesi 5–6 mm longo, ovario ovoideo 6–8-sulcato pilis simplicibus 1–1.5 mm longis etiam stellatis minutis copiose induto, stylis 6–8 in columnam basi connatis superne 1.5 mm longis liberis filiformibus; capsulis ovoideis arista 1–1.5 mm inclusa 7.5–8.5 mm longis et 6–7 mm latis, obtuse angulatis, carpellis 6–8 praeter apicem versus lateraliter connatis, sutura ventrali pro parte maxima atque dorsali 2 mm dehiscentibus, indumento copioso pilis parvis stellatis 0.2–0.3 mm longis et subrigidis simplicibus 1–1.5 mm longis, stipite 0.5–1 mm longo; seminibus 1 vel 2 maturitate 4–4.5 mm longis, nucella obovoidea 2–2.3 × 1–1.2 mm, ala deltoidea 2–2.2 × 1–1.5 mm apice acuta.

DISTRIBUTION: Endemic to Fiji and thus far known only from the two Vanua Levu collections cited below, occurring on a forested ridge at elevations of 600–925 m, as shrubs or small trees 1.5–3 m high. The petals are noted as yellow; both specimens bore flowers in August, and the type also bears essentially mature fruits.

HOLOTYPE: Fiji: Vanua Levu: Mathuata: Mt. Ndelaikoro, alt. 600–925 m, *Fiji Dept. Agr.* (coll. J. W. Parham) *12790* (BISH holotype; isotype at SUVA), August 21, 1962.

Another collection, obtained at the same place and date, is *Fiji Dept. Agr.* (coll. J. W. Parham) *12833* (BISH, SUVA).

The new species is not closely related to the several other Fijian endemic Melochiae, although like them it falls into Sect. *Visenia* K. Schum. as defined in the excellent revision by Aaron Goldberg (in Contr. U. S. Nat. Herb. 34:191–363. 1967). Its only close relative appears to be *M. umbellata* (Houtt.) Stapf, like which it has broad, suborbicular stipules. *Melochia umbellata* is a frequent species from India to the Philippines and New Guinea, and it also occurs as a naturalized introduction in Hawaii.

From *M. umbellata* the Fijian species differs most obviously in its fruits, which are ovoid, distinctly narrowed distally, with firmly coherent carpels that dehisce along both sutures, and have seeds with comparatively short, deltoid wings about 2 mm long. In contrast, the fruits of *M. umbellata* are oblong, scarcely narrowed distally, with only weakly cohering carpels that are truncate-obtuse on the dorsal apex and dehisce only ventrally, and have seeds with very obvious wings 4–5.3 mm long. Glandular hairs of the type described above are not evident on the specimens of *M. umbellata* available to me, nor are they mentioned by Goldberg, but otherwise the two species are very similar in vegetative aspects. The Fijian species has the flowers less evidently umbellate, the calyx-lobes larger, the petals yellow (rather than usually pink) and slightly larger, and the carpels 6–8 rather than consistently 5.

It is a pleasure to name this species for the collector, John W. Parham, author of *Plants of the Fiji Islands* (1964) and many other significant botanical works, under whose direction the herbarium of the Fiji Department of Agriculture has become a valuable scientific asset.

Sterculia L.

Sterculia dasyphylla sp. nov.

Arbor ad 13 m alta, ramulis crassis apicem versus 1.5–2 cm diametro fistulosis, cicatricibus foliorum delapsorum obdeltoideis ad 1 × 1.5 cm; indumento (ramulorum, stipularum, petiolorum, et inflorescentiae pedunculorum) copioso persistente, pilis brunneis stellatis 2–5-radiatis, radiis adscendentibus 0.3–0.8 mm longis; stipulis crasso-coriaceis late ovatis ad 6 × 12 mm subacutis utrinque densissime pilosis, cicatricibus conspicuis transversis; foliis apices ramulorum versus congestis digitatim 6- vel 7-foliolatis, petiolis crassis circiter 5 mm diametro basim versus incrassatis 30–35 cm longis, petiolulis brevibus 3–5 mm longis robustis (2.5–3.5 mm diametro); foliolorum laminis papyraceis in sicco fuscis obovato-lanceolatis, 20–30 cm longis, 7.5–10 cm latis, basi acutis et in petiolulum decurrentibus, apice in acuminem gracilem mucronulatum circiter 1.5 cm longum angustatis, margine integris anguste recurvatis, costa utrinque prominente, nervis secundariis utrinsecus 17–22 patentibus supra paullo subtus peracute elevatis, rete venularum copioso intricato utrinque subplano, supra costa excepta demum subglabratis, subtus persistenter pilosis, pilis patentibus simplicibus subrigidis 0.8–1.5 mm longis hirtellis atque pilis adpressis stellatis 6–9-radiatis ad 0.3 mm diametro arcte puberulis; inflorescentiis axillaribus paniculatis amplis multifloris 20–35 cm longis ad 15 cm latis, ramulis saepe striatis dense et arcte stellato-tomentellis (radiis pilorum adscendentibus 0.1–0.2 mm longis); floribus in fasciculis ultimis 2–5 congestis, bracteis oblongo-ovatis ad 3 × 1.5 mm acutis ubique copiose sed minute stellato-tomentellis, bracteolis similibus ovato-lanceolatis 0.7–1.5 mm longis; floribus ♂: pedicellis minutis haud 0.5 mm longis; calyce carnoso sub anthesi campanulato 2–3 mm longo et diametro, extus pilis irregulariter stellatis multiradiatis ad 0.1 mm diametro copiose et minute tomentello, intus glabro praeter lobos pilis simplicibus 0.4–0.8 mm longis patentibus vel retrorsis copiose hirtello, lobis 5 deltoideis 1–1.5 mm longis latisque acutis; gynandrophori stipite 0.3–1 mm longo glabro, antheris circiter 15 sessilibus, thecis 0.4 mm longis, carpellis sterilibus 0 vel 2 glabris ad 0.4 mm longis; floribus hermaphroditis: pedicellis crassis ad 1.5 mm longis et 1.3 mm diametro; calyce ut ♂ sed ad 4 mm longo et 6 mm diametro, lobis recurvatis ad 2 × 2 mm; gynandrophoro crasso-cylindrico ad 1 × 1 mm, antheris videtur fertilibus circiter 15, carpellis 2

liberis obovoideis post anthesin ad 3.5 × 3 mm pilis stellatis radiis patentibus 0.4–0.6 mm longis copiose hirtellis, stylis circiter 1.5 mm longis mox liberis lateraliter pilosis, ovulis circiter 10.

DISTRIBUTION: Endemic to Fiji and known only from the type collection, taken from a tree about 13 m high in lowland forest; flowers, borne in November, have the calyx cream-colored.

HOLOTYPE: Fiji: Vanua Levu: Thakaundrove: Navonu Creek area, Natewa Peninsula, *Fiji Dept. Agr.* (coll. I. Qoro) *14092* (BISH holotype; isotype at SUVA), November, 1964.

The relationship of *S. dasyphylla* is not immediately apparent, as it does not appear closely allied to other Melanesian or Malesian Sterculiae with digitately compound leaves. The only other species of *Sterculia* known from Fiji, *S. vitiensis* Seem., has the leaflet-blades merely stellate-puberulent beneath and the petiolules 1–1.5 cm long; it lacks the copious indument that covers the vegetative parts of the new species and is composed of long, simple hairs (or these may be stellate with ascending rays) as well as minute, appressed, stellate ones. *Sterculia vitiensis* is known only in fruit and *S. dasyphylla* only in flower; perhaps the reduction to 2 of the number of carpels will prove significant, since *S. vitiensis* appears to have 5 follicles in fruit, these noted as having 14 seeds.

MELASTOMATACEAE

Astronidium A. Gray

Astronidium lepidotum sp. nov.

Arbor gracilis ad 6 m alta, partibus novellis copiosissime lepidotis, squamis pallido-fuscis membranaceis orbicularibus 0.4–0.6 mm diametro sessilibus medifixis margine subintegris vel erosulis, ramulis in internodiis distalibus subquadrangularibus 3–4 mm diametro inferne subteretibus; petiolis validis leviter canaliculatis 2–4 cm longis primo lepidotis mox glabratis, foliorum laminis subcoriaceis lanceolato-ellipticis, 11–18 cm longis, 3.5–6 cm latis, basi attenuatis et in petiolum longe decurrentibus, superne in apicem obtusum vel obtuse cuspidatum gradatim angustatis, margine inconspicue recurvatis, in sicco supra saepe flavovirentibus subtus brunneis, juvenilibus praecipue subtus copiose lepidotis mox glabratis, e basi 3-nerviis, nervis supra subplanis subtus prominentibus exterioribus 4–8 mm intra marginem, nervis marginalibus inconspicuis 1–1.5 mm intra marginem ut venulis transversis et rete venularum copioso utrinque planis vel subtus leviter prominulis; inflorescentia terminali compacta alabastro ad 3 × 5 cm sub fructu ad 7 cm diametro e basi 3-divisa, ramulis dichasiorum modo 2- vel 3-plo ramosis, bracteis subcarnosis late ellipticis ad 22 × 15 mm 3-nerviis apice obtusis utrinque lepidotis, interioribus similibus ad 7 × 7 mm alabastro incurvis et flores 3 sessiles vel subsessiles includentibus; florum alabastris umbonato-obovoideis ad 4 × 3 mm, calyce extus copiosissime lepidoto intus glabro, petalis 5 late imbricatis deltoideo-ovatis, staminibus 10 minutis solis visis, stylo carnoso-cylindrico, placentis conspicue clavatis; fructibus veteribus solis visis videtur depresso-globosis et ad 10 mm diametro, placentis maturis 5 clavatis 2.5–3 mm longis, stipite manifesto, parte seminifera circiter 1.5 mm longa apice incrassata triquetra, seminum cicatricibus numerosis.

DISTRIBUTION: Endemic to Fiji, and known with certainty only from the type locality in eastern Viti Levu, occurring in lowland forest as a slender tree about 6 m high. The type bears young inflorescences and the only other available collection, unfortunately without data, fruits slightly past maturity.

HOLOTYPE: Fiji: Viti Levu: Tailevu: Waimaro River, near Copper Mine, *Fiji Dept. Agr.* (coll. I. Qoro & I. T. Kuruvoli) *13640* (BISH holotype; isotype at SUVA), January 15, 1964.

OTHER MATERIAL: Fiji, without further data, *Fiji Dept. Agr.* (BISH, SUVA).

This very distinct new species is suggestive only of *A. macranthum* (A. C. Sm.) A. C. Sm., differing in having its leaf-blades more narrowly elliptic (about three times as long as broad), its inflorescence more compact, and its flowers 5-merous (this being readily apparent in fruit, the five erect placentae at full maturity being 2.5–3 mm long, obviously stalked, and with a stout

seminiferous portion about 1.5 mm long). In *A. macranthum* the leaf-blades are about twice as long as broad (8–14 × 4–7.5 cm), the inflorescence is 10–12 cm in diameter when fully mature, the flowers are 7–9-merous, and the placentae at full maturity are comparatively short-stalked, with the seminiferous portion 3–3.5 mm long. *Astronidium lepidotum* is further characterized by the very copious lepidote indument that cloaks the young parts, young leaves, inflorescences, and calyces in bud; while similar scales are sporadically present in *A. macranthum,* they are even more evanescent there. *Astronidium tomentosum* (Seem.) A. C. Sm. has copious and persistent scales, but they are smaller (less than 0.1 mm in diameter) and ciliolate, and the leaves are much smaller than in either of the species discussed above.

LOGANIACEAE

Neuburgia Bl.

In his 1962 review of the Loganiaceae (in Fl. Males. I. 6:293–387), P. W. Leenhouts pointed out, and apparently quite correctly, that the generic name *Couthovia* A. Gray is a synonym of *Neuburgia* Bl. The essential generic synonymy follows:

Neuburgia Bl. Mus. Bot. Lugd.-Bat. 1:156. 1850; Markgraf in Bot. Jahrb. 61: 222. 1927; Merr. & Perry in J. Arnold Arb. 23: 415. 1942; Leenh. in Fl. Males. I. 6:363. 1962.

Couthovia A. Gray in Proc. Am. Acad. Arts Sci. 4:324. 1859.

Originally described as a member of the Apocynaceae, *Neuburgia* was correctly referred to the Loganiaceae by Markgraf in 1927 as an older name for *Crateriphytum* Scheff. (1898), a circumscription extended by Leenhouts to include *Couthovia.* Leenhouts interprets the genus to include about 10–12 species, extending from the Philippines and Celebes to Fiji; he proposes a new combination for *Couthovia corynocarpa* A. Gray and attributes to this taxon no fewer than 12 other species believed distinct by their describers. Such a wholesale reduction of the taxa proposed by K. Schumann, Gilg & Benedict, S. Moore, Kanehira & Hatusima, and Merrill & Perry would seem to require careful documentation, which is not found in Leenhouts's 1962 treatment.

However the Papuasian members of *Neuburgia* eventually may be re-evaluated, I find no valid reasons in the 1962 revision of the Malesian species to reject the specific delimitations I proposed in 1942 for the six Fijian species, which Leenhouts (Fl. Males. I. 6:366) casually suggests may also be referable to *N. corynocarpa.* Excellent characters exist in *Neuburgia* in reference to stipules, size and shape of leaves (although these are certainly not absolute), texture and size of corolla, indument within the corolla, style-length, and shape and size of the mature fruits.

For those students of Pacific plants who do not share Leenhouts's concepts of specific limits, I herewith list the species of *Neuburgia* occurring in Fiji; all of these are now represented by more recent material than that cited in 1942. The sequence of my treatment (in Sargentia 1: 99–107. 1942) is here followed.

Neuburgia collina (A. C. Sm.) comb. nov.
Couthovia collina A. C. Sm. in Sargentia 1: 101. 1942.

Neuburgia corynocarpa (A. Gray) Leenh. in Fl. Males. I. 6:365. 1962.
Couthovia corynocarpa A. Gray in Proc. Am. Acad. Arts Sci. 4:324. 1859.
Couthovia seemanni A. Gray in Proc. Am. Acad. Arts Sci. 5:320. 1862.

Neuburgia alata (A. C. Sm.) comb. nov.
Couthovia alata A. C. Sm. in Sargentia 1:104. 1942.

Neuburgia macroloba (A. C. Sm.) comb. nov.
Couthovia macroloba A. C. Sm. in Sargentia 1:104. 1942.

Neuburgia macrocarpa (A. C. Sm.) comb. nov.
Couthovia macrocarpa A. C. Sm. in Sargentia 1:105. 1942.

Neuburgia pachyantha (A. C. Sm.) comb. nov.
Couthovia pachyantha A. C. Sm. in Sargentia 1:106. 1942.

RUBIACEAE

Calycosia A. Gray

In reviewing the Fijian species of *Calycosia* in 1942, Fosberg (in Sargentia 1:137) expressed the opinion that Gillespie (in Bishop Mus. Bull. 74:37. 1930) and the present writer (in Bishop Mus. Bull. 141:153. 1936) had interpreted *C. petiolata* A. Gray too broadly. Reviewing the specimens here assigned by Gillespie, I believe that those cited are correctly referred to *C. petiolata,* although this is not true of some of his uncited collections so identified by him. My 1936 interpretation was indeed too broad, and Fosberg quite correctly removed two of the cited specimens to his new species *C. macrocyatha.* Fosberg's division of this latter species into two varieties, distinguished by having sessile or pedunculate involucres, is open to question; the Bishop Museum isotype of var. *macrocyatha* (an isotype not examined by Fosberg at the time of his description) has a clearly pedunculate inflorescence, as does *St. John 18326* (BISH). I believe that maturity of the inflorescence dictates whether or not it is clearly pedunculate or apparently sessile. But quite apart from the recognition of these two varietal taxa, there are now seen to be four Fijian species of *Calycosia,* readily differentiated by the following key:

Inflorescence pedunculate, or at least not basally subtended by numerous, essentially free, imbricate bracts; stipules and inflorescence-parts essentially glabrous.
- Heads solitary, the bracts united except at apex into an urceolate cupule 1–1.6 cm broad at anthesis; stipules 1–2 cm long; leaf-blades 10–26 × 3–12 cm .... *C. lageniformis* (Gillespie) A. C. Sm.
- Heads usually in threes, the larger bracts of each head united into a broad cyathiform cupule at least 2 cm broad at anthesis; stipules 2.5–4 cm long; leaf-blades 18–32 × 8–13 cm ..... *C. macrocyatha* Fosberg

Inflorescence sessile, complex, branching from base, subtended by numerous, essentially free, imbricate bracts, the bracts of the ultimate heads also essentially free; stipules (2–) 3–6 cm long, sometimes pilose in the basal portion.
- Bracts dorsally glabrous, often ciliolate, rarely sparsely pilose distally; calyx-limb dorsally glabrous or rarely sparsely pilose, glabrous within, often ciliolate apically; petioles 2–8 cm long; leaf-blades oblanceolate to narrowly elliptic, 12–40 × 4–18 cm ... *C. petiolata* A. Gray
- Bracts and calyx-limb dorsally copiously pilose, rarely very tardily glabrate, the calyx-limb similarly pilose within except toward base; petioles 3–12 cm long; leaf-blades broadly elliptic, 25–42 × 10–19 cm ..... *C. callithrix* A. C. Sm.

Calycosia callithrix sp. nov.

Frutex 2–4 m altus, partibus novellis lateritio-pilosis mox glabratis, ramulis validis glabris superne saepe complanatis et ad 1 cm diametro; stipulis subcoriaceis oblongis 4–6 cm longis, basi ad 1.5 cm connatis et ibi copiose pilosis (pilis lateritio-ochraceis multicellularibus 0.5–1 mm longis) 1.5–2 cm latis superne saepe glabris liberis in lobos 1–2 cm longos obtusos vel acutos apice fissis; petiolis 3–12 cm longis crassis (2.5–5 mm diametro) parce pilosis mox glabratis; foliorum laminis subcoriaceis late ellipticis, 25–42 cm longis, 10–19 cm latis, basi acutis vel attenuatis et in petiolum decurrentibus, apice obtusis vel obtuse cuspidatis, supra glabris, subtus praecipue ad nervos disperso-pilosis (pilis ut eis stipularum 0.4–0.8 mm longis) saepe mox glabratis, costa valida supra subelevata et canaliculata subtus prominente, nervis secundariis utrinsecus 15–20 curvato-adscendentibus marginem versus anastomosantibus supra subplanis subtus valde elevatis, rete venularum supra plano subtus prominulo inconspicuo; inflorescentiis apices ramulorum versus axillaribus congesto-cymosis complexis, copiose ramulosis sed in pseudo-capitulum multiflorum 5–7 cm diametro multibracteatum valde contractis, bracteis exterioribus imbricatis sed liberis oblongo-orbicularibus ad 4 × 4 cm dorso pilosis vel raro lente glabratis, bracteis floriferis membranaceis obovato-oblongis 17–25 × 6–12 mm copiose nervatis apice 3–5-fidis dorso et apicem versus ventro ut calyce pilosis, bracteolis sub floribus 2 vel 3 diversis oblongo-lanceolatis ad 7 mm longis pilosis; floribus subsessilibus vel pedicellis carnosis crassis glabris ad 7 mm longis hypanthio parvo sub anthesi confluentibus, calycis limbo infundibuliformi membranaceo 11–20 mm longo apice 4–8 mm diametro extus et intus praeter basim pilis multicellularibus 0.5–1 mm longis patentibus densissime ornato, lobis 5–7 deltoideo-lanceolatis diversis 5–10 × 1.5–3 mm obtusis vel subacutis; disco conspicuo annulari-pulvinato glabro 0.8–1 mm alto; corolla stylisque non visis; fructibus ovoideo- vel obovoideo-cylindricis ad 10 × 4.5 (–6) mm

primo plus minusve pilosis saepe mox glabratis, basi gradatim angustatis, apice abrupte truncatis et calycis limbi caduci cicatricibus; pyrenis semiteretibus dorso levibus ventro complanatis basi subacutis apice truncatis.

DISTRIBUTION: Endemic to Fiji, and thus far known only from south-central Viti Levu, occurring in dense forest at elevations of 250–600 m. Specimens are noted as from shrubs 2–4 m high; the bracts, bracteoles, and calyx-limb are pale green. Curiously, neither corollas nor styles have been found in several dissections, although many essentially mature fruits are mixed in heads with younger flowers; the mature fruits are noted as red.

HOLOTYPE: Fiji: Viti Levu: Namosi: hills north of Wainavindrau Creek, between Korombasambasanga Range and Mt. Naitarandamu, alt. 250–450 m, *Smith 8422* (US 2191117 and 2191118 holotype, BISH isotype), September 11, 1953.

OTHER COLLECTIONS: Fiji: Viti Levu: Namosi: northern base of Korombasambasanga Range, in drainage of Wainavindrau Creek, *Smith 8631* (BISH, US); vicinity of Namosi, *Parks 20272* (BISH, US), *Gillespie 2920.1* (BISH); lower slopes of Mt. Voma, *Gillespie 2518* (BISH). Naitasiri: between Nanduna and Serea, *Fiji Dept. Agr. 12591* (BISH, SUVA).

Like the more abundant *C. petiolata* A. Gray, the new species has its head-like inflorescences subtended by numerous and essentially free bracts; it differs in having the bracts copiously pilose, and more particularly in having its large calyx-limb similarly pilose on both surfaces with reddish, multicellular, spreading hairs. Differences in leaf dimensions are of little consequence, but in general the new species has longer petioles and leaf-blades that are somewhat larger and more definitely broadly elliptic.

Hedstromia A. C. Sm.

Since I described this monotypic genus (in Bishop Mus. Bull. 141:146. 1936), no additional material had been noted, and therefore it is a satisfaction to have a new collection, in full fruit. The new material comes from Taveuni, not distant from the type locality in the Natewa Bay area of Vanua Levu. In fruit, *Hedstromia* is scarcely separable from *Psychotria,* although its stipules are nearly completely free and distally rounded and entire. This type of stipule, to be sure, does occur in *Psychotria,* but apparently not in any of the Fijian species. The essential characters of *Hedstromia* are to be noted only in flower: the free petals, stamens attached at petal-bases, and paired styles. While the type collection has only young flowers, these characters seem of generic significance. In view of the new material, supplementary data on the single species are now presented.

Hedstromia latifolia A. C. Sm. in Bishop Mus. Bull. 141:148, fig. 77. 1936.

Tree 6–8 m high, glabrous throughout, the robust branchlets conspicuously flattened and 6–10 mm broad in the distal internodes; stipules elliptic-oblong, laterally connate only at base, 10–17 × 6–10 mm, rounded or broadly obtuse at apex, soon caducous, the scar conspicuous; leaves and inflorescences as originally described; fruiting inflorescence ample, 11–15 cm long and 18–24 cm broad, 2-parted from base or borne on a peduncle to 2.5 cm long, 4- or 5-times divided, the branchlets stout, the ultimate ones bearing 1–3 fruits, the pedicels conspicuous, (3–) 6–13 mm long; fruits turbinate, smooth when fresh, rugulose and indistinctly 8-costate when dried, 11–14 mm long, 10–13 mm broad, obtuse at base, broadly rounded at apex and surmounted by the inconspicuously dentate incurved calyx-limb (0.5–1 mm long) and the pulvinate disk (about 1 mm high and 2 mm in diameter), the pericarp carnose; pyrenes semiobovoid, 9–10.5 × 7.5–8 × 4.5–5 mm, obtuse at base, rounded-truncate and slightly depressed at apex, thickened at margins, ventrally smooth, dorsally 3-carinate, the keels inconspicuous proximally but sharply raised distally.

DISTRIBUTION: Endemic to Fiji and thus far known only from eastern Vanua Levu and Taveuni, occurring in forest at 100–300 m altitude as a tree 6–8 m high. The flower-buds are pale green and the fruit "green and red," probably being red with a persistent green calyx-limb. *Mbulei* was noted as a local name for the type collection.

HOLOTYPE: Fiji: Vanua Levu: Thakaundrove: hills west of Korotasere, Natewa Bay region, *Smith 1944* (BISH holotype; isotypes at GH, K, NY, UC, US, etc.), June 8, 1934.

OTHER MATERIAL: Fiji: Taveuni: Wainisavu, Nggeleni (northeastern part of island), *Fiji Dept. Agr.* (coll. D. Koroiveibau) *14405* (BISH, SUVA), July 12, 1965.

Mastixiodendron Melchior

The remarkable genus *Mastixiodendron,* at first (in Bot. Jahrb. 60:167. 1925) referred to the family Cornaceae, is now well established in the Rubiaceae, as noted by Danser (in Blumea 1:69. 1934), the present writer (in Bishop Mus. Bull. 141:140. 1936, in J. Arnold Arb. 26:108. 1945), and Merrill and Perry (in J. Arnold Arb. 26:254. 1945). Five species are known, from Papuasia to Fiji, and a sixth is here added.

Mastixiodendron robustum sp. nov.

Arbor grandis partibus novellis stipulis et inflorescentiae ramulis obscure et evanescenter puberulis et petalis intus pilosis exceptis ubique glabra, ramulis validis in internodiis ultimis complanatis ad 5 mm latis; stipulis rigidis oblongo-lanceolatis anguste imbricatis, 16–25 mm longis, 4–6 mm latis, apice acutis, mox caducis, cicatrice interpetiolari conspicua; petiolis robustis (2–5 mm diametro) leviter canaliculatis 1.5–3 (–5.5) cm longis, superne anguste alatis; foliorum laminis in sicco crasse coriaceis utrinque fusco-viridibus oblongo-ellipticis, (8–) 10–18 (–36) cm longis, (2.5–) 4–7.5 (–13) cm latis, basi acutis et in petiolum longe decurrentibus, apice obtusis vel obtuso-cuspidatis, margine anguste recurvatis, supra nitidis, costa valida utrinque subplana, nervis secundariis utrinsecus 12–25 patentibus utrinque conspicue prominulis 2–4 mm intra marginem anastomosantibus, rete venularum copioso intricato utrinque prominulo; inflorescentiis in axillis foliorum summorum dispositis dichasiorum modo ramosis, 2–7 cm longis, 1.5–5 cm latis, pedunculo crasso 5–15 mm longo ut ramulis bracteis pedicellisque puberulis (pilis pallidis unicellularibus haud 0.1 mm longis) mox glabratis, bracteis inconspicuis deltoideis ad 0.5 × 1 mm subacutis caducis, floribus paucis, pedicellis 0.5–2 mm longis in calycem dilatatis; calyce late cupuliformi sub anthesi 1.5–2 mm longo et apice 2.5–3.5 mm diametro, limbo patente lobis 4 late ovatis 2 mm latis obtuse cuspidatis inclusis 0.5–0.7 mm longo; petalis 4 liberis valvatis crasse carnosis ovato-deltoideis, 3.3–3.8 mm longis, 2.7–3.2 mm latis, apice subacutis, extus glabris, intus pilis pallidis unicellularibus crispatis 0.2–0.3 mm longis praeter basim copiose indutis; staminibus 4, filamentis lanceolato-filiformibus 2–2.5 mm longis basi ad 0.5 mm latis superne gradatim angustatis, antheris dorsifixis oblongis 0.8–0.9 mm longis utroque rotundatis; stylo crasso 1–1.5 mm longo superne bifido mox caduco; disco conspicuo carnoso glabro pulvinato ad 0.6 mm alto et 2.5 mm diametro; ovarii crassi loculis 2, ovulis solitariis apice pendulis; fructibus in sicco lignosis obovoideo-ellipsoideis ad 6 × 3.8 cm (in vivo fortasse majoribus), basi et apice obtusis disco inconspicuo coronatis, calycis limbi cicatrice infra fructus apicem 2 cm inconspicue notatis, pericarpio ad 5 mm crasso, exocarpio in vivo forsan carnoso, mesocarpio dense fibroso, endocarpio duro 2–4 mm crasso, loculis 2, seminibus oblongo-ellipsoideis videtur ad 25×4 mm, albumine copioso.

DISTRIBUTION: Endemic to Fiji, and thus far known only from southeastern Viti Levu and eastern Vanua Levu, where it occurs as a main storey tree in dense forest at elevations from near sea level to 125 m. The available specimens were taken from trees of various degrees of maturity from 6 m upward; the larger ones are noted as having spreading buttresses and dense, round crowns. The petals are said to be white or yellow and the fruit yellow. Local names noted have been *kauloa* (for the type) and *nduvula* (for nos. *94* and *2667* cited below). The tree is presumably of potential interest for its timber, but only no. *2667* so notes.

HOLOTYPE: Fiji: Viti Levu: Naitasiri: Waimanu River above Vatuvula, alt. 125 m, *Fiji Dept. Agr.* (*M. J. Berry 31,* collected by I. Qoro) *L.13374* (BISH holotype; isotype at SUVA), September 1, 1967.

OTHER COLLECTIONS: Fiji: Viti Levu: Naitasiri: Navuakethe, Waindrandra Creek (Waindina River basin), *Fiji Dept. Agr. 169* (SUVA). Tailevu: Raralevu, about 3 miles east of Nausori, *Fiji Dept. Agr. 2546* (SUVA), *2667* (BISH, SUVA). Rewa: base of Mt. Korombamba, *Fiji Dept. Agr. 1189* (BISH, SUVA). Vanua Levu: Thakaundrove: Navonu Creek, Natewa Peninsula, *W. J. Howard 94* (BISH, SUVA), June 12, 1968.

The new species differs in many obvious characters from the two species of *Mastixiodendron* thus far known from Fiji, being much more robust in its vegetative and reproductive parts. In leaf size it suggests *M. pilosum* A. C. Sm., but the blades are notably thicker and more coriaceous. *Mastixiodendron pilosum* has a persistent foliar indument even in advanced fruiting condition; its leaves have only 7–13 pairs of secondary nerves; and its mature fruit is no larger than 30 × 8 mm, with the calycine scar less than 5 mm from the apex, and with a thinner and less woody wall. The other Fijian species, *M. flavidum* (Seem.) A. C. Sm., has thinner, smaller leaf-blades (not exceeding 15 × 6.5 cm and usually much smaller) with no more than 12 pairs of secondary nerves; its petals do not exceed 2.5 × 1.8 mm; and its fully mature fruits are no larger than 32 × 11 mm, with the calycine scar less than 7 mm from the apex.

Among the three known Papuasian species, *M. robustum* seems closest to *M. smithii* Merr. & Perry, but that species has leaf-blades with only 10–14 pairs of secondary nerves and a short-acuminate apex; it has larger petals (about 5 mm long) that are puberulent without as well as copiously pilose within, a puberulent disk, and a fruit suggesting that of the new species, to 4.5 × 2 cm (although not necessarily fully mature).

Although this noteworthy Fijian plant was first collected by B. E. Parham in 1938 or earlier, only his no. *2667* was fertile, bearing a few flowers and a yellow fruit about 2.5 cm in diameter; nos. *169* and *2546* have exceptionally large leaves (as indicated by the parenthetical dimensions above) that are probably from sucker sprouts. It was suspected that these specimens could not be referred to *M. flavidum*, a conclusion reinforced by the recent collections made under the supervision of Messrs. M. J. Berry and W. J. Howard for the Land Resources Division, Directorate of Overseas Surveys. Of these, no. *L.13374*, the type, bears fully mature flowers, and no. *94*, well developed fruits.

Sukunia A. C. Sm.

In proposing the genus *Sukunia* in 1936 (in Bishop Mus. Bull. 141:136), I noted that the single species, *S. pentagonioides*, may have been defined to include a non-typical element, a collection from Vanua Levu with the petioles and fruits longer than are found in typical material from Taveuni. On the basis of his examination of the wood, S. J. Record had expressed the opinion that more than one species was represented by the cited material. Newly available collections from southeastern Viti Levu agree excellently with the Vanua Levu specimens, and the complete material now at hand demonstrates that two well marked Fijian species represent the endemic genus *Sukunia*. The differences are readily indicated in the following key:

Stipules comparatively large, up to 7 × 2 cm; leaves densely aggregated near apices of branchlets, sessile or with petioles less than 2 cm long; inflorescences subfasciculate, the peduncle obscure, not more than 8 mm long at anthesis and in fruit; flowers comparatively large, the calyx about 14 mm long, with lobes 7–8 × 4–5 mm, the corolla-tube 35–43 mm long, the lobes 35–50 mm long; fruits irregularly rugose and indistinctly costate, ovoid, 5–8 × 4–5.5 cm, rounded at base, abruptly narrowed toward apex ..... *S. pentagonioides*

Stipules 3–5 cm long, hardly 1 cm broad; leaves not conspicuously apically congested, with petioles 7–17 cm long; inflorescences subcymose, the peduncle 15–30 mm long at anthesis and in fruit; flowers smaller, the calyx 8–9 mm long, with lobes about 2 × 2–2.5 mm, the corolla-tube 15–20 mm long, the lobes 22–25 mm long; fruits rugose and irregularly 8–10-costate, narrowly ovoid, about 5–8 × 3–4 cm, gradually narrowed at base and apex ..... *S. longipes*

Sukunia pentagonioides (Seem.) A. C. Sm. in Bishop Mus. Bull. 141:137, fig. 71. 1936. *Gardenia pentagonioides* Seem. Fl. Vit. 122. 1866.

This species, now believed endemic to Taveuni, is represented by more material than

cited in 1936. On the basis of the recent collections, the following modification of my 1936 description may be noted. All currently available material is cited below.

Slender tree to 5 m high; leaves sessile or essentially so, the petiole, if present, less than 2 cm long, the blade up to 100 cm long; inflorescence probably not strictly fasciculate, but congested-cymose on a very short peduncle; peduncle in fruit stout, 5–8 mm long, the pedicel (above articulation) essentially lacking or up to 1 cm long; fruits ovoid, 5–8 × 4–5.5 cm, irregularly rugose and indistinctly costate when dried, rounded at base, abruptly narrowed distally to a short, stout, conical apex.

DISTRIBUTION: This slender tree, although not abundant, is striking in the wet Taveuni forest at elevations of 600–900 m for its simple, essentially unbranched habit, large fragrant flowers with pure white corolla-lobes, and large brown fruits borne on the trunk below distal clusters of leaves.

HOLOTYPE: Fiji: Taveuni: forest above Somosomo, *Seemann 219* (K holotype; isotype at GH), May 30, 1860.

OTHER COLLECTIONS: Fiji: Taveuni: hills east of Somosomo near the crater lake, *Fiji Dept. Agr. 14384* (SUVA), *Smith 855* (BISH, GH, K, NY, UC, US), *8376* (BISH, US); valley between Mt. Manuka and Mt. Koroturanga, east of Wairiki, *Smith 8301* (BISH, US).

Sukunia longipes sp. nov.

Arbor vel frutex gracilis 3–7 m altus, partibus novellis pilis 0.2–0.7 mm longis stramineo-sericeis mox glabratis, ramulis crassis apicem versus ad 1 cm diametro, foliis oppositis non ramulorum apice congestis; stipulis subcoriaceis oblongo-lanceolatis 3–5 cm longis basi haud 1 cm latis, dorso sericeis, apice acutis; petiolis perspicuis 7–17 cm longis 2–10 mm diametro basi incrassatis, canaliculatis, subpersistenter sericeis; foliorum laminis papyraceis obovatis, 33–70 cm longis, 13–41 cm latis, subtus costa secundariisque perduranter sericeis aliter glabris, basi angustatis et in petiolum breviter decurrentibus, apice ad acuminem 1 cm longum cuspidatis, costa valida supra subplana vel canaliculata subtus prominente, nervis secundariis utrinsecus 18–23 patentibus marginem versus anastomosantibus supra paullo elevatis subtus prominentibus, rete venularum supra immerso subtus plano; inflorescentiis axillaribus subcymosis pedunculatis ut videtur 8–15-floris, pedunculo subtereti crasso grosse sulcato sub anthesi 1.5–2 cm longo; floribus apice pedunculi aggregatis (juvenilibus maturis interspersis), bracteis majoribus subpapyraceis late deltoideis 5–6 mm longis latisque breviter acuminatis utrinque primo sericeis, bracteis mox caducis, bracteolis subulatis 1–1.5 mm longis; pedicellis subteretibus rugulosis 5–8 mm longis ut calyce obscure puberulis mox glabratis; calyce obconico sub anthesi 8–9 mm longo, hypanthio sulcato-ruguloso longitudine limbum subaequante, limbo erecto apice circiter 5 mm diametro, lobis 5 late ovato-deltoideis, apice conspicue subulato incluso circiter 2 mm longis, 2–2.5 mm latis, margine breviter ciliolatis, sinibus acutis; disco annulari-pulvinato glabro; corolla hypocrateriformi, tubo anguste obovoideo-cylindrico 15–20 mm longo superne 5–6 mm diametro extus minute sed copiose sericeo intus filamentorum basi pilis 0.5–1 mm longis copiose antrorso-piloso aliter glabro, lobis 5 contortis glabris oblongo-lanceolatis 22–25 mm longis 5–6 mm latis basi contractis apice subacutis; staminibus 5 corollae tubo sub anthesi inclusis, filamentis tubi basim versus affixis ligulatis 3–4 mm longis, antheris basim versus dorsifixis anguste oblongis 10–11 mm longis apice subacutis; stylo quam corollae tubo breviore in 3–4 mm apicalibus incrassato bifido; fructibus 1 vel 2 per inflorescentiam, pedunculo pedicellisque ut fructu saepe leproso-corticatis et 3–5 mm diametro, pedunculo 1.5–3 cm longo, pedicello 5–8 mm longo, fructibus coriaceis anguste ovoideis 5–8 × 3–4 cm rugosis irregulariter 8–10-costatis utroque gradatim angustatis, calycis limbo demum caduco, seminibus numerosis compressis circiter 10 mm longis pulpa horizontaliter inclusis.

DISTRIBUTION: Endemic to Fiji, and thus far known only from southeastern Viti Levu and interior Vanua Levu, occurring in dense or dry forest at elevations of 150–900 m. Specimens are from slender trees or simple shrubs 3–7 m high; the fragrant flowers bear white corollas.

The only flowering specimen, designated as the type, was collected in January; fruits have been obtained in June and November.

HOLOTYPE: Fiji: Viti Levu: Naitasiri: Tholo-i-suva, near the waterfall, *Fiji Dept. Agr.* (coll. D. Koroiveibau & S. Pillay) *11573* (BISH holotype, SUVA isotype), January 15, 1959.

OTHER COLLECTIONS: Fiji: Viti Levu: Naitasiri-Rewa boundary: Mt. Kombalevu, *Parks 20335 p. p.* (BISH). Rewa: Mt. Korombamba, *Parks 20335 p. p.* (BISH). Vanua Levu: Thakaundrove-Mathuata boundary: crest of Korotini Range, between Navitho Pass and Mt. Ndelaikoro, *Smith 560* (BISH, NY, US).

As indicated in the above key, the new species differs from *S. pentagonioides* in several well marked characters, notably in having obvious petioles, a more open inflorescence, comparatively small flowers, and a narrower fruit. Although Parks assigned the same number to his two collections cited above, field notes indicate that they were obtained on different dates and in different localities.